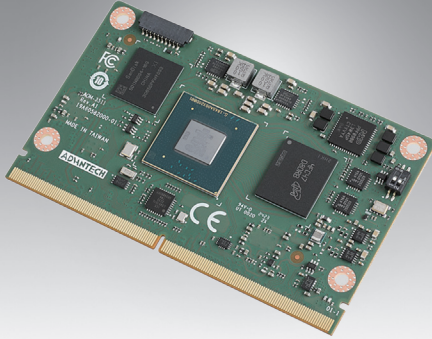


# AOM-5521

## NXP i.MX95 Cortex®-A55 AI-on-Module Nano

NEW



### Features

- NXP Arm® Cortex®-A55 i.MX95 Six Cores up to 2.0 GHz
- 1 x Arm Cortex-M7 core & 1 x Cortex-M33 core
- Onboard LPDDR5 8 GB, 6400MT/s memory
- 1 x 10 Gigabit Ethernet, 2 x Gigabit LAN
- 1 x 4 lane MIPI-DSI, 1 x Dual channel LVDS
- 1 x USB3.2 Gen1By1, 4 x USB2.0, 1 x USB 2.0 OTG, 4 x UART, 5 x I2C, 14 x GPIO, 2 x PCIe3.0, 2 x CAN-FD
- Neural network accelerator built-in
- Supports Yocto Linux



### Introduction

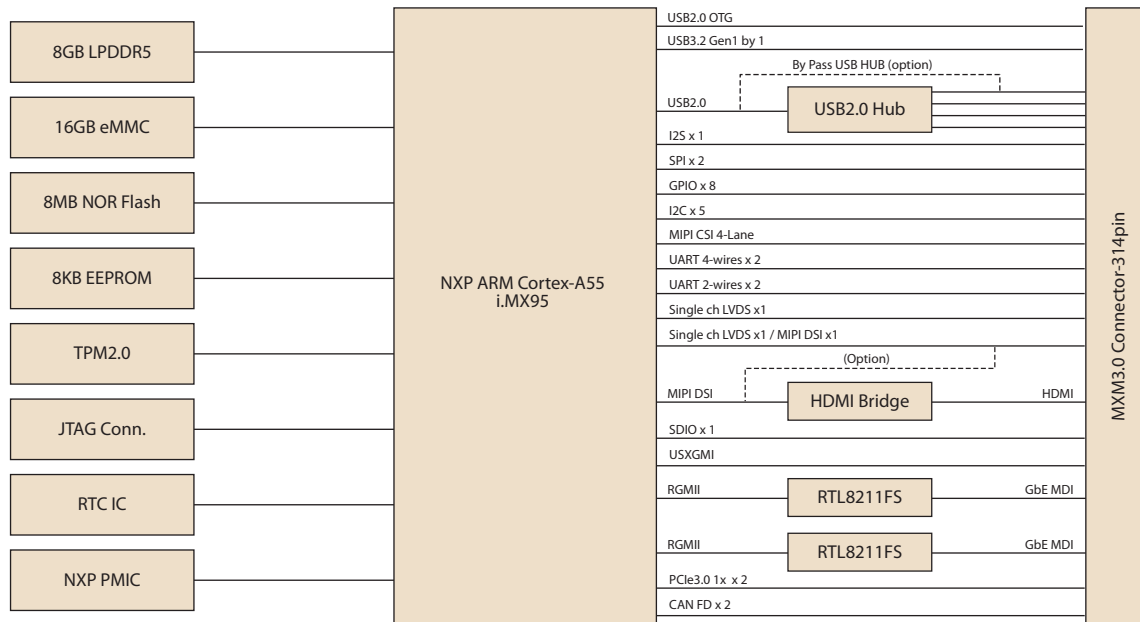
The AOM-5521 stands as a state-of-the-art AI-on-Module, incorporating the robust NXP i.MX95 System-on-Chip (SOC). This SOC features an impressive configuration, with up to six Arm Cortex-A55 cores, accompanied by a dedicated Cortex-M7 and M33 real-time processor, and an added Neural Network accelerator. The AOM-5521 provides extensive connectivity options, including USB 2.0, USB 3.2 Gen1By1, 10 Gigabit Ethernet, MIPI-CSI, PCI Express, as well as both a dual-channel LVDS and a 4-lane MIPI-DSI Display interface. These remarkable features position the AOM-5521 as an exceptional choice for a wide variety of embedded applications.

AOM-5521 is paired with SOM-DB2510 carrier board for faster end product peripheral integration and time-to-market. The reference schematics and layout checklists documentations for carrier board development will be provided along with the open-sourced Linux BSP, test utilities, hardware design utilities and reference drivers.

### Specifications

|                  |                       |  |                                     |
|------------------|-----------------------|--|-------------------------------------|
| Form Factor      |                       | AOM Nano / SMARC 2.2   |                                     |
| Processor System | CPU                   | NXP i.MX95 Cortex-A55 Six core (up to 2.0GHz)  |                                     |
|                  | MCU                   | 1 x Arm Cortex-M7 core & 1 x Cortex-M33 core   |                                     |
| Memory           | Technology            | LPDDR5 6400MT/s  |                                     |
|                  | Capacity              | On-board 8GB LPDDR5  |                                     |
|                  | Flash                 | 16 GB eMMC NAND Flash for O.S. and 8 MB QSPI NOR Flash for board information                             |                                     |
| NPU              | NPU                   | Neural Network accelerator   |                                     |
| Graphics         | LVDS/MIPI DSI         | 1 x 4 lane MIPI-DSI (Optional)<br>1 x Dual channel LVDS  |                                     |
|                  | HDMI                  | 1 x HDMI (Optional)  |                                     |
|                  | Parallel RGB          | -  |                                     |
|                  | VGA                   | -  |                                     |
|                  | Graphics Engine       | 2D/3D Graphic Acceleration supporting 1G Pixel/s, OpenVG 1.1, Open GL ES3.1, Vulkan, and Open CL 1.2 FP. |                                     |
| Ethernet         | H/W Video Codec       | Decoder: H.265, H.264, 4Kp30<br>Encoder: H.265, H.264, 4Kp30   |                                     |
|                  | Chipset               | 1 x NXP i.MX95 integrated USXGMII, 2 x NXP i.MX95 integrated RGMII                                       |                                     |
|                  | Speed                 | 1 x 10 GbE, 2 x 10/100/1000 Mbps   |                                     |
| RTC              | RTC                   | Yes  |                                     |
| Debug port       |                       | JTAG   |                                     |
| WatchDog Timer   |                       | Yes (1-6553s, power on/off 4s)   |                                     |
| Security         |                       | TPM 2.0  |                                     |
| I/O              | PCIe                  | 2 x PCIe 3.0   |                                     |
|                  | SATA                  | -  |                                     |
|                  | USB                   |  | 1 USB3.2 Gen1By1                    |
|                  |                       |  | 4 USB 2.0                           |
|                  |                       |  | 1 USB 2.0 OTG                       |
|                  | Audio                 |  | 2 x I²S                             |
|                  | SPDIF                 |  | -                                   |
|                  | SDIO                  |  | 1                                   |
|                  | Serial Port           |  | 2 x 4-wire UART and 2 x 2-wire UART |
|                  | SPI                   |  | 2                                   |
|                  | CAN                   |  | 2 x CAN-FD                          |
|                  | GPIO                  |  | 14                                  |
|                  | I²C                   |  | 5                                   |
|                  | Camera Input          |  | 1 x 4-lane MIPI CSI                 |
| System Bus       |                       | -  |                                     |
| Touch            |                       | -  |                                     |
| Keypad           |                       | -  |                                     |
| Power            | Power Supply Voltage  | Fixed 5V DC source   |                                     |
|                  | Power Consumption     | TBD  |                                     |
| Environment      | Operating Temperature | 0 ~ 60 °C/ -40 ~ 85 °C   |                                     |
|                  | Operating Humidity    | 40°C@ 95% relative humidity, non-condensing  |                                     |
| Mechanical       | Dimensions (W x D)    | 82 x 50 mm   |                                     |
| Operation System |                       | Yocto Linux  |                                     |
| Certifications   |                       | CE/FCC Class B   |                                     |

## Block Diagram



## Ordering Information

| Part No.           | CPU               | Memory | Flash Memory | UART | 10 GbE | GbE | USB3.2 Gen1By1 | USB 2.0 | Display             | I2S | I2C | SPI | Operating Temperature |
|--------------------|-------------------|--------|--------------|------|--------|-----|----------------|---------|---------------------|-----|-----|-----|-----------------------|
| AOM-5521B6-9590NA1 | i.MX95 Hexa-cores | 8GB    | 16GB         | 4    | 1      | 2   | 1              | 5       | 1 x MIPI DSI (Opt.) | 2   | 5   | 3   | -40 ~ 85 °C           |
| AOM-5521C6-9590NA1 | i.MX95 Hexa-cores | 8GB    | 16GB         | 4    | 1      | 2   | 1              | 5       | 1 x Dual ch LVDS    | 2   | 5   | 3   | 0 ~ 60 °C             |

\* DRAM and eMMC of other capacity are available through project-based support. Please contact sales for details.

## Development Board

| Part No.        | Description   |
|-----------------|---------------|
| SOM-DB2510-ROA1 | Carrier Board |

## Optional Accessories

| Part No.          | Description                                      |
|-------------------|--|
| 1701200220        | Debug port cable                                 |
| 1700019474        | D-SUB 9P(F)/D-SUB 9P(F) RS232/RS485 100c         |
| 1970006107N001    | Heat Spreader                                    |
| 1970005259T001    | Semi Heat Sink (0 ~ 60 °C)                       |
| 1970005260T001    | Semi Heat Sink (-40 ~ 85 °C)                     |
| 96PSA-A36W12R1-3  | ADAPTER 100-240V 36W 12V 3A                      |
| 1700001524        | Power Cord 3P UL 10A 125V 180cm                  |
| 170203183C        | Power Cord 3P Europe (WS-010+WS-083) 183cm       |
| 1700019146        | Power Cord CCC 3P 10A 250V 183cm                 |
| 170203180A        | Power Cord 3P UK 2.5A/3A 250V 1.83M              |
| 1700008921        | Power Cord 3P PSE 183cm                          |
| SQF-ISDM1-16G-21C | SQF SD Card I-SD UHS-I MLC 16G (0~70°C)          |
| SQF-ISDM1-16G-21E | SQF I-SD UHS-I MLC 16G (-40~85°C)                |
| AIW-167           | 802.11 a/b/g/n/ac.QCA6174A,2T2R,w/BT4.1,M.2 2230 |
| 1750008717-01     | Dipole Ant. D.B 2.4/5G WIFI 3dBi SMA/M-R BLK     |
| 1750007965-01     | Antenna Cable R/P SMA (M) to MHF4, 300mm         |
| AIW-344FQ*        | AIW-3 series LTE CAT4 mini PCI-e module          |
| 1751000652-01     | Multi-band dipole antenna covering 600~3000 MHz  |
| 1751000628-01     | Coaxial Cable, 30cm, SMA female to IPEX1         |

\*Please contact us for suggesting suitable cellular module for your region.

## Dimensions

Unit: mm

